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ABSTRACT

Self-regulation refers to the degree that individuals become metacognitively, motivationally, and behaviorally active in their own learning processes. One potentially helpful means of examining students' self-regulation is to analyze their internal representations, or scripts, for recurring academic tasks. For this study, researchers analyzed the script elements, the primary script norms, the elements of self-regulation incorporated into students' scripts, and the effects of gender on basic script elements in 61 students in grade 11. The scripts related to three common high school learning situations: writing a term paper, studying for a final examination, and preparing an oral presentation. The incidence and nature of self-regulation revealed in the students' written protocols were also examined. Results show that in the 3 learning situations, there were 1224 script elements, which included 624 elements of self-regulation. Primary norm scripts, basic script elements, and elements of self-regulation in 15 categories of self-regulated learning processes varied according to learning situations. There was no gender effect found on script elements or elements of self-regulation. Findings indicate that scripts can be useful sources for investigating self-regulation in high school students. Contains approximately 85 references. (RJM)

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Elements of Self-Regulation in Students' Scripts Related to Particular Learning Situations

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Abstract

We examined eleventh grade students' scripts related to three common high school learning situations: writing a term paper, studying for a final examination and preparing an oral presentation. In addition we examined the incidence and nature of self-regulation revealed in the students' written protocols. Thirty one females and 30 males in a public high school participated in the study. In the three learning situations there were 1224 script elements which included 624 elements of self-regulation. Primary norm scripts, basic script elements and elements of self-regulation in 15 categories of self-regulated learning processes varied according to learning situations. There was no gender effect found on script elements or elements of self-regulation.

Elements of Self-Regulation in Students' Scripts Related to Particular Learning Situations

Self-regulation refers to the degree that individuals become metacognitively, motivationally, and behaviorally active participants in their own learning processes (Zimmerman, 1986). Effective learners, through self-regulation, become aware of functional relations between their pattern of thought and action and social and environmental outcomes (Zimmerman & Martinez-Pons, 1988). Self-motivated learners, approach educational tasks with confidence, diligence, and resourcefulness. They seek out information when needed and take the necessary steps to master skills and knowledge. Learners who resort to methods of self-regulation of their learning experiences consider acquisition of learning as a systematic and controllable process, and they accept greater responsibility for their achievement (Zimmerman & Martinez-Pons, 1986; Zimmerman, 1990, 1994). Current educational researchers posit that self-regulation of learning enables students to achieve higher levels of learning outcomes (Henderson, 1986; Wang & Peverly, 1986; Zimmerman & Martinez-Pons, 1986, 1990; Zimmerman & Schunk, 1989; Zimmerman, 1994).

Several self-regulated learning strategies which involve diverse elements of self-regulation have been proposed by researchers during the last two decades (Bandura & Cervone, 1983, 1986; Bandura & Schunk, 1981; Corno & Mandinach, 1983; Mace & Kratochwill, 1988; McCombs, 1984; Paris, Newman, & Jacobs, 1984;

Spates & Kanfer, 1977; Thorensen & Mahoney 1974; Wang, 1983; Zimmerman, 1981, 1994). Zimmerman and Martinez-Pons (1986) identified 14 such strategies: self-evaluation, organization and transformation, goal setting and planning, information seeking, record keeping, self-monitoring, environmental structuring, giving self-consequences, rehearsing and memorizing, seeking social assistance (peers, teacher, or other adults) and reviewing (notes, books, or tests). Each of these self-regulated learning strategies contains one or more elements of self-regulation.

One potentially helpful means of examining students' self-regulation is to analyze their internal representations (scripts) for recurring academic tasks. Internal representations of what children perceive of episodes, events, objects, places, and people of the external world form knowledge structures (Mandler, 1979; Minsky, 1975; Nelson, 1986; Schank & Abelson, 1977). Knowledge structures may also be considered as scripts or as schemata (Abelson, 1981; Bjorklund, 1989; Fivush, 1984; Furman & Walden, 1990; Mandler, 1983; Rumelhart, 1976; Schank & Abelson, 1977; Slackman, Hudson, & Fivush, 1986; Tomkins, 1979, 1991; Yacci, 1990). Since children's scripts come from their own experiences in the real world (Katz, 1991; Nelson & Gruendel, 1986; Nelson et al., 1983; Ross & Berg, 1990; Schank & Abelson, 1977), they give meaning to children's experiences; According to Flavell, Miller, and Miller (1993) scripts form general mental images that tell the child how things are supposed to happen in familiar routines.

A script is organized in terms of temporal and causal relations between its component acts based on a definite goal (Bjorklund, 1989; Flavell, Miller, & Miller, 1993 Foti & Lord, 1987; Furman & Walden, 1990; Lucariello, 1983; Schank & Abelson, 1977; Tomkins, 1979, 1991, 1992). Scripts consist of episodic or event actions and slots or fillers. Slots or fillers provide additional information functioning in a gap-filling or optional manner. The two components--event actions and slots--are sometimes called typical and atypical actions (Graesser, Woll, Kowalski, & Smith, 1980). They may also be further explained as involving primary and secondary script elements. Demorest and Alexander (1992) studied whether person spcific scripts can be reliably identified from individuals' narratives, and whether those identified scripts help to organize individuals' understandings of different situations. They found that in many cases general sequences were shared scross individuals and the particular nature of the elements within sequences was person-specific. They point out that scripts are individuals' experiences organized in the form of ideo-affective understandings.

As many researchers have found, learners' scripts are related to academic learning experiences they undergo in their school and out-of-school activities. Katz (1991) explained that children acquire scripts in a number of ways: by identifying with people whom they try to emulate, by extracting rules from their own experiences, by extracting from direct teaching as rules, and

by extracting from their own habitual acts. Scripts become useful for learning and comprehending written and spoken language (Constable, 1986; Lucariello, Kyratzis, & Engel, 1986; Ross & Berg, 1990; Schank & Abelson, 1977), understanding other people's behavior, and guiding one's own behavior (Schank & Abelson, 1977). The organization of scripts enhances formal and informal assessments of language that involve describing routine events (Nelson, 1981, 1986), communicative activities in daily living (Hammill, 1985), making inferences about particular events, (Wiig & Secord, 1985), and remembering script-related stories (Semel, Wiig, & Secord, 1987).

Learners' experiences often involve diverse elements of self-regulation. Scripts provide children (a) with greater stimulation for motivation and personal involvement (Lucariello & Nelson, 1985) in their learning experiences; (b) with opportunity for understanding the structure and function of their world, how it develops and how it affects their cognitive processing (Nelson, Fivush, Hudson & Lucariello, 1983); and (c) a foundation of shared social information necessary for successful social interactions (Flavell, Miller, & Miller, 1993) in their classroom and out-of-school environments.

In the present study, we examined the quantitative and qualitative nature of (a) script elements, (b) primary script norms, and (c) elements of self-regulation incorporated into students' scripts, and (d) effects of gender on basic script elements and self-regulation elements in students' scripts as

represented by their written descriptions related to particular learning situations.

Method

A repeated-measures mixed model factorial design was adopted for this study, three learning situations being the within subjects independent variables and scripts actions and elements of self-regulation being the two dependant variables.

Participants

A mixed group of 30 boys and 31 girls studying in the 11th grade of a public high school in southeastern Alabama formed the sample for this study. All students had some prior experience in the three learning situations about which they were expected to write.

Instrument

The instrument developed for data collection required students to write, based on their experience, what they would do related to three learning situations: (a) preparing a term paper (research paper) for an English class, (b) getting ready for a final examination, and (c) preparing an oral presentation for a class. They were told to write on the topics in distinct action steps stating different stages fully and clearly within a time period of one hour. The instrument was piloted with 40 students in Grade 11 in a high school in an adjacent city. It was found that instructions given in the instrument were clear to students and the time period of one hour was sufficient for them to respond to all three questions.

Procedure

On a specified date and time, two teachers of English in Grade 11 classes administered the instrument to students as a class assignment. Students wrote their responses under the supervision of teachers, observing normal classroom conditions. The researchers collected completed response sheets from the principal of the school.

Coding of data

Data coding was handled by two trained judges who have had over 10 years of experience in the conduct of educational research. Before starting the coding, the two judges had a number of practice sessions making use of response sheets obtained from the pilot test. They coded students' responses in the study along five basic dimensions: (a) basic script elements, (b) action script elements and explanatory script elements (c) primary and secondary script elements, (d) elements of self-regulation in students' scripts, and (e) categories of elements of self-regulation in terms of self-regulated learning processes.

For each learning situation, judges coded data individually on separate sheets for 61 students. What has been written by a participant related to a particular learning situation given in the instrument was considered as a student's script for that particular learning situation. Basic script elements written by participants under the three learning situations were identified and separately listed. A phrase or a clause which gives a distinctly separable meaning is considered a "basic script

element." Each of these script elements was separately identified as explained by four questions: what, how, when, and why. Basic script elements as explained by the question "what" were considered "action script elements" and those explained by how, when, and why questions were considered "explanatory script elements."

Judges identified primary script elements for each learning situation on the basis of frequencies of occurrence of a particular basic script element and also on a consideration of what elements made a coherent script for the particular learning situation. Script elements with fewer frequencies and which also were considered as of less importance for making coherent scripts for the three learning situations were identified as secondary script elements. Judges studied all scripts in three learning situations and identified elements of self-regulation incorporated in those scripts. Selected self-regulatory elements were subsequently categorized under 15 self-regulated learning processes 13 of which had been identified by researchers from prior studies (Baird, 1983; Bandura, 1982, 1986; Corno & Mandinarch, 1983; McCombs, 1984; Paris, Newman, & Jacobs, 1984; Schunk, 1984; Thoresen & Mahoney, 1974; Wang, 1983; Zimmerman, 1983, Zimmerman & Martinez-Pons, 1986) and two were identified by the researchers from the present study. All codings done by individual judges were compared and considered at length before unanimity of agreement was achieved in the final set of data used for analysis. For maintaining consistency and accuracy a third

judge with more than 10 years of research background and academic experience checked all data coded for analysis.

In the selection of script elements the two judges agreed on 1198 script elements out of the total number of 1224 script elements which amounted to 97.88% of agreement. The judges agreed on 1182 in the selection of action script elements and explanatory script elements which amounted to an agreement of 96.57%. In selecting elements of self-regulation, the level of agreement between the two judges amounted to 94.63% which in actual numbers were 581 out of 614 elements of self-regulation. The level of agreement between the two judges in the categorization of self-regulatory elements under 15 self-regulated learning processes was 95.28%. There was total agreement between the two judges in the selection of primary script elements for three learning situations.

Analysis of data

The data were analyzed using multivariate tests and univariate tests to examine effects of the three learning situations and participants' gender on basic script elements and elements of self-regulation incorporated in students' scripts. Oneway ANOVA tests were used to examine simple effects of the variables and post-hoc analysis (Tukey tests) was conducted for further comparison of elements of self-regulation in processes of self-regulated learning which were found to be statistically significant in the overall univariate analysis. Qualitative

research analysis procedures were used to explain the nature of scripts.

Results

Elements in scripts

Scripts written by students related to three learning situations varied in length. Some scripts contained one action script element and one explanatory script element (eg. I always go to the computer and get my work off it), while some scripts contained as many as 19 basic script elements involving both action script elements and explanatory script elements. Table 1 provides an example of a lengthy script with 19 basic script elements.

Insert Table 1 about here

Out of 1224 basic script elements in students' scripts related to three learning situations, 527 was for Learning Situation 1 (preparing a term paper), 325 was for Learning Situation 2 (getting ready for the final examination), and 372 was for the Learning Situation 3 (preparing an oral presentation for the class). As percentages of the total number of script elements, they were 43.06%, 26.55%, and 30.39% respectively. The largest number of basic script elements (68.13%) was found to be action script elements as explained by the question "what," 18.30% of script elements were explanatory script elements explained by the question "how," 8.17% of script elements

explained the question "when" and 5.39% was found to be explanatory script elements explained by question "why."

In testing whether the instrument resulted in differential responding by male students and female students, overall F values revealed no statistically significant differences between genders in students' basic script elements, $F(,177) = 2.13$, $p > .05$, or elements of self-regulation, $F(1,177) = 1.07)$, $p > .05$, incorporated in students' scripts related to the three learning situations. There were no interaction effects either, related to gender in basic script elements, $F(2,177) = 0.43$, $p > .05$ or for elements of self-regulation, $F(2,177) = 1.04$, $> .05$ by learning situations. Consequently the instrument was considered to be non-discriminative for two genders and responses were pooled for further analysis.

Results of multivariate analysis of variance (MANOVA) tests revealed statistically significant differences among three learning situations in script elements incorporated in students' scripts, $F(2, 180) = 8.22$, $p < .01$. Univariate F tests showed statistically significant simple effects of basic action script elements explained by the question "what," across the three learning situations, $F(2,180) = 27.62$, $p < .01$. The highest means in basic script elements were recorded for action script elements in all three learning situations (see table 2). The lowest mean frequencies were recorded for explanatory script elements as explained by the question "why". Tukey tests indicated statistically significant contrasts between preparing a term

paper and getting ready for a final examination and preparing a term paper and preparing an oral presentation on action script elements.

Insert Table 2 about here

Primary script elements and secondary script elements were identified from these basic script elements. Primary script elements and secondary script elements basically mean required and less-required script elements to make meaningful and coherent scripts related to the three learning situations. Primary scripts for the three learning situations with the number of students who stated a particular primary script element in their scripts are provided in Table 3.

Insert Table 3 about here

The script identified for preparing a term paper was the longest with seven primary script elements. Out of 61 participants, 56 included the primary script element of "write the final draft," and only 24 participants said "research in a library." Another primary script element indicated by 53 participants was "gathering information on the topic from different sources." Four individual scripts related to preparing a term paper contained all seven primary script elements in the given order. Of the rest, 12 participants included 6 of the

primary script elements; 16 included 5; and 17 included 4 primary script elements in their scripts. Most of the scripts presented almost the same basic story whether in a few script elements or in a large number of script elements.

The learning situation of getting ready for a final examination contained 4 primary script elements. Fifty-seven students agreed on the script element of "study all material that the test would cover." The least frequent primary script element ("answering a practice test") occurred 11 times. Many other participants in the study included script elements about answering or reviewing past tests, although they did not use the term "practice test." Only seven students had all four identified primary script elements in their scripts for getting ready for the final examination, while 14 had included 3 primary script elements and 23 students had included 2 primary script elements.

Five primary script elements were identified for preparing an oral presentation. Only 12 students wrote specifically about deciding on a topic. Many started their scripts with "gathering information on the topic." Three students included all five primary script elements in their scripts. Seven students included 4 primary script elements in their scripts, while 21 students included 3 primary script elements.

Self-regulation elements in scripts

Altogether we found 614 elements of self-regulation incorporated in students' scripts related to the three learning situations. The highest number of elements of self-regulation

(265) occurred in scripts for writing a term paper, 156 for preparing for the final examination; and 193 for preparing an oral presentation. The number of elements of self-regulation in each script varied from 1 to 9.

Elements of self-regulation identified in students' scripts in the three learning situations were categorized under the 15 self-regulatory learning processes. The highest number of elements of self-regulation in the learning situation of preparing a term paper was found for the category of organization and transformation with a mean of 1.39 (SD = 0.69) (see Table 4).

Insert Table 4 about here

Most of the other elements of self-regulation were in self-regulated learning processes of seeking information (M = 1.05, SD = 0.56), goal-setting and planning (M = 0.62, SD = 0.69), and keeping records and monitoring (M = 0.46, SD = 0.62).

In the learning situation of getting ready for the final examination, the self-regulated learning process of reviewing records-notes had a mean frequency of 0.61 (SD = 0.56) and a percentage of 26.8% of total elements of self-regulation belonging to the particular learning situation. Other highly ranked self-regulated learning processes with high frequencies of elements of self-regulation were seeking information (M = 0.34

SD = 0.48), goal setting and planning (M = 0.31, SD = 0.53), rehearsing and memorizing (M = 0.25, SD = 0.43), and self-evaluation (M = 0.21, SD = 0.45).

The learning situation of preparing an oral presentation had most of its self-regulation elements related to seeking information (M = 0.62, SD = 0.52, organization and transformation (M = 0.61, SD = 0.67), rehearsing and memorizing (M = 0.56, SD = 0.67), goal setting and planning (M = 0.46, SD = 0.65), and controlling emotions (M = 0.23, SD = 0.50).

Considering all three learning situations, the highest number of elements of self-regulation was found in the self-regulated learning process of organization and transformation (21.3%). Seeking information (20.0%), goal setting and planning (13.8%), self-evaluation (8.5%), keeping records and monitoring (8.5%), rehearsing and memorizing (8.0%), and reviewing notes (7.3%) were the other self-regulated learning processes which had high frequencies of elements of self-regulation.

MANOVA overall F value indicates statistically significant differences in frequencies of elements of self-regulation under 15 self-regulated learning processes in students' scripts related to three learning situations, $F(2, 180) = 10.32$, $p < .01$. Univariate F values show statistically significant differences in frequencies of elements of self-regulation in 11 self-regulated learning processes (see Table 5).

Insert Table 5 about here

Elements of self-regulation in these 11 processes of self-regulated learning were further analyzed employing one-way ANOVA with Tukey tests to examine further contrasts. Oneway ANOVA statistics and Tukey test results indicated statistically significant between-groups differences for all three comparisons of the three learning situations related to organization and transformation, $F(2, 182) = 65.27$, $p < .01$; seeking information, $F(2, 182) = 28.27$, $p < .01$; and rehearsing and memorizing, $F(2, 182) = 22.33$, $p < .01$. Although self-regulated learning processes of seeking teacher-assistance, $F(2,182) = 3.10$, $p < 05$ and reviewing texts, $F(2, 182) = 3.10$, $p < .05$ had statistically significant between groups differences in oneway ANOVA F values, they did not show statistically significant group differences in Tukey tests results.

Discussion

Results from this study indicate that students' scripts related to school tasks are well developed in terms of primary and secondary elements and that these scripts, can be useful sources for investigating self-regulation in high school students. They represent elements of numerous strategies of self-management of learning or modes of conduct that high school students apply on their own to conditions of problem solving in different learning situations. Students' scripts reflect their

underlying cognitive structures (Nelson & Gruendel, 1986). Elements of self-regulation represented in students' scripts are generated from students' cognitive structures related to different learning experiences.

It is not surprising that students create relatively lengthy scripts for writing a term paper in comparison with studying for a final examination and preparing an oral presentation. Out of the three learning situations investigated in this study, writing a term paper involves the coordination of several important activities and multiple phases in the production of a successful paper. Thus the highest number of action script elements, of explanatory script elements, and of elements of self-regulation appear in students' protocols related to preparing a term paper.

In addition to required basic script actions, students appear concerned with writing explanatory script elements. These secondary script elements explain how, when, or why particular script actions are to be carried out. These are considered in script theory as fillers, or atypical script actions that elaborate the basic episode, event, penomenon, or the story explained by means of the basic primary script actions. Incorporating explanatory script actions in scripts is a common occurrance consistent with much research findings (Bower, Black, & Turner, 1979; Fivush & Mandler, 1985; Hudson, 1988; Levy & Fivush, 1993; Nelson, 1986; Nelson & Gruendel, 1981; Nelson & Seidman, 1984; Schank & Abelson, 1977; Tomkins, 1987).

In the three learning situations students' scripts contain an impressive number of elements of self-regulated learning processes. That the largest number of elements of self-regulation are found in the learning situation of preparing for a term paper may be due to the term paper's involving the most activities in the way of preparation. Most of the elements of self-regulation for this learning situation are associated with self-evaluation, organization and transformation, goal-setting and planning, seeking information, and keeping records and monitoring. These findings are consistent with findings of Zimmerman and Martinez-Pons (1986) that students in high school often use self-regulated learning strategies including planning and goal-setting, organization and transformation, seeking information, rehearsing and memorizing, keeping records and monitoring, and reviewing notes. Reflective thinking, which is more a metacognitive process than others, appears only in protocols related to preparing a term paper, an activity which often requires more reading, thinking, and analyzing than the other learning situations.

Indications of emotional control as a self-regulating process do not appear in writing a term paper, whereas emotional control appears to be needed when getting ready for a final examination and preparing for an oral presentation both of which involve certain amount of anxiety. Oral presentations contain emotionally stressful aspects such as standing before an audience, making eye-contacts with those in the audience, trying

to recollect things to say, forming the presentation from memory, controlling the voice in a suitable manner, etc. Preparing for an examination becomes stressful when one is not sure about particular questions that would come for the examination, what to know and how much to know before the examination, what to write and how to write from memory at the examination, etc. It may be because of the high levels of stress associated with the aspects unknown in each situation that a considerable number of students include script elements related to controlling emotions in their depictions of preparing an oral presentation and getting ready for a final examination.

Self-regulated learning processes of memorizing and reviewing notes appear more conspicuous for getting ready for the final examination. This is a strategy many examination-takers adopt when preparing for their examinations. This finding is congruent with the findings of Zimmerman and Martinez-Pons (1986, 1988). In a similar manner (a) rehearsing and memorizing and (b) seeking adult assistance appear to be two conspicuous self-regulated learning processes for preparing for the oral presentation. Elements in self-regulated learning processes of goal-setting and planning and seeking information appear somewhat equally important for all three learning exercises. Zimmerman and Martinez-Pons (1986, 1988) found these two self-regulated learning processes as being used frequently by high school students related to their learning situations.

A script contains a sequence of actions that defines a well-known situation (Schank & Abelson, 1977). The fact that students incorporate a large number of elements of self-regulation into their script actions related to different learning contexts suggests that they use these self-regulation elements when actually carrying out their learning tasks. Students scripts do actually predict students' actions. They are always wriiten from one particular role's point of view (Schank & Abelson, 1977). Also one's emotions (Demorest & Alexander, 1992), perspectives, conceptualizations, and experiences (Schank & Abelson, 1977) may be included in one's script actions related to a certain situation or an event.

A cognitive perspective suggests that self-regulation can be nurtured by helping individuals to develop, practice, and discover schemata and by helping them to plan, monitor, and evaluate scripts (Meichenbaum, 1990). Encouraging students to think of learning experiences in terms of script actions may initiate and promote the use of self-regulated learning processes in their learning tasks. While the use of self-regulated learning processes in learning tasks contributes to academic success (Butler & Winne, 1995; Corno, 1993; Howard-Rose & Winne, 1993; Zimmerman, 1990) it has been recorded in research that the major cause of under-achievement is the inability of students to self-control their learning effectively (Krouse & Krouse, 1981).

As self-regulated learning appears very much influenced by students' goal orientations and their academic interest

conditions it would be interesting to do further studies with samples of high school students of both genders, to examine the quantitative and qualitative nature of basic script elements, and elements of self-regulation incorporated in students' scripts related to particular learning situations under different goal orientations and different academic interest conditions. Such studies may enable us to understand more fully the relationships between general goal orientations (such as mastery or performance goals) and specific types of self-regulatory activities that students exhibit when engaged in academic tasks.

References

Abelson, R. P. (1981). Psychological status of the script concept. American Psychologist, 36, 715-729.

Baird, L. L. (1983). Attempts at defining personal competency. (Research Report No. 83-15). Princeton, NJ: Educational Testing Service.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems.Journal of Personality and Social Psychology, 45, 1017-1028.

Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. Organizational Behavior and Human Decision Processes, 38, 92-113.

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. Journal of Personality and Social Psychology, 41, 586-617.

Bjorklund, D. F. (1989). Children's thinking: Developmental function and individual differences. Pacific Grove, CA: Brooks/Cole.

Bower, G. H., Black, J. B., & Turner, T. J. (1979). Scripts in memory for text. Cognitive Psychology, 11, 177-220.

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning:A theoretical synthesis. Review of Educational Research, 65, 245-281.

Constable, C. M. (1986). The application of scripts in the organization of language intervention contexts. Event Knowledge, 10, 205-230.

Corno, L. (1993). The best-laid plans: Modern conceptions of volition and educational research. Educational Researcher, 22(2), 14-22.

Corno, L., & Mandinach, E. (1983). The role of cognitive engagement in classroom learning and motivation. Educationa. Psychologist. 18, 88-108.

Demorest, A. P., & Alexander, I. E. (1992). Affective scripts as organizers of personal experience. Journal of Personality, 60, 645-663.

Fivush, R. (1984). Learning about school: The development of kindergartners' school scripts. Child Development, 55, 1697-1709.

Fivush, R., & Mandler, J. M. (1985). Developmental changes in the understanding of temporal sequences. Child Development, 56, 1437-1446.

Flavell, J. H., Miller, P. H., & Miller, S. A. (1993). Cognitive development. Englewood Cliffs, NJ: Prentice Hall.

Foti, R. J., & Lord, R. G. (1987). Prototypes and scripts: The effects of alternative methods of processing information on

rating accuracy. Organizational Behavior and Human Decision Processes, 39, 318-340.

Furman, L. N., & Walden, T. A. (1990). Effect of script knowledge on preschool children's communicative interaction. Developmental Psychology, 26, 227-233.

Graesser, A. C., Woll, S. B., Kowalski, D. J., & Smith, D. A. (1980). Memory for typical and atypical actions in scripted activities. Journal of Experimental Psychology: Human Learning and Memory, 6, 503-515.

Hammill, D. D. (1985). Detroit tests of learning aptitude. Austin, TX: PRO-ED.

Henderson, R. W. (1986). Self-regulated learning: Implications for the design of instructional modules. Contemporary Educational Psychology, 11, 405-427.

Howard-Rose, D., & Winne, P. H. (1993). Measuring component and sets of cognitive processes in self-regulated learning. Journal of Educational Psychology, 85, 591-604.

Hudson, J. A. (1988). Children's memory for atypical actions in script-based stories: Evidence for a disruption effect. Journal of Experimental Child Psychology, 46, 169-173.

Katz, L. A. (1991). Cultural scripts: The home school connection. Early Child Development and Care, 73, 95-102.

Krouse, J. H., & Krouse, H. J. (1981). Toward a multimodal theory of academic achievement. Educational Psychologist, 16, 151-164.

Levy, G. D., & Fivush, R. (1993). Scripts and gender: A new approach for examining gender role development. Developmental Review, 13, 126-146.

Lucariello, J. (1983, April). Context and conversations. In K. Nelson (Chair), Relations between event representations and language use. Symposium conducted at the meeting of the Society for Research in Child Development, Detroit.

Lucariello, J., Kyratzis, A., & Engel, S. (1986). Event representations, context, and language. Event Knowledge, 7, 136-160.

Lucariello, J., & Nelson, K. (1985). Slot-filler categories as memory organizers for young children. Developmental Psychology, 21, 272-282.

Mace, F. C., & Kratochwill, T. R. (1988). Self-monitoring: Applications and issues. In J. Witt, S. Elliot, & F. Gresham (Eds.), Handbook of behavior therapy in education (pp. 489-502). New York: Pergamon.

Mandler, J. M. (1979). Categorical and schematic organization in memory. In C. R. Puff (Ed.), Memory Organization and structure (pp. 259-299). New York: Academic Press.

Mandler, J. M. (1983). Representations. In J. H. Flavell & E. M. Markman (Eds.), P. H. Mussen (Series Ed.), Handbook of Child Psychology: Vol. 3. Cognitive development. New York: John Wiley.

McCombs, B. L. (1984). Processes and skills underlying continuing intrinsic motivation to learn: Toward a definition of

motivational skills training intervention. Educational Psychologist, 19, 199-218.

Meichenbaum, D. (1990). Cognitive perspective on teaching self-regulation. American Journal on Mental Retardation, 94 367-369.

Minsky, M. (1975). A framework for representing knowledge. In P. H. Winston (Ed.), The psychology of computer vision (pp. 211-277). New York: McGraw-Hill.

Nelson, K. (1981). Social cognition in a script framework. In J. H. Flavell & L. Ross (Eds.), Social cognitive development: Frontier and possible futures (pp. 97-118). New York: Cambridge University Press.

Nelson, K. (1986). Event knowledge: Structure and function in development. Hillsdale, NJ: Erlbaum.

Nelson, K., & Gruendel, J. (1981). Generalized event representations: Basic building blocks of cognitive development. In M. E. Lamb & A. L. Brown (Eds.), Advances in developmental psychology. (Vol. 1, pp. 131-138). Hillsdale, NJ: Erlbaum.

Nelson, K., & Gruendel, J. M. (1986). Children's scripts. In K. Nelson (Ed.), Event knowledge: Structure and function in development (pp. 131-158). Hillsdale, NJ: Erlbaum.

Nelson, K., Fivush, R., Hudson, J., & Lucariello, J. (1983). Scripts and the development of memory. In J. A. Meacham (Series Ed.) & M. T. H. Chi (Vol. Ed.), Trends in memory development research: Vol. 9 Contributions to Human Development. (pp. 52-70). New York: Karger Basel.

Nelson, K., & Seidman, S. (1984). Playing with Scripts. In I.Bretherton (Ed.), Symbolic play: The development of social understanding (pp. 45-71). New York: Academic Press.

O'Connell, B., & Gerard, A. (1985). Scripts and scraps: The development of sequential understanding. Child Development, 56 671-681.

Paris, S. G., Newman, R. S., & Jacobs, J. E. (1984). Social contexts and functions of children's remembering. In C. J. Brainard, & M. Pressley (Eds.), The cognitive side of memory development (pp. 81-115). New York: Springer-Verlag.

Pressley, M., Borkowski, J. G., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. In R. Vasta & G. Whitehurst (Eds.), Annals of child development (Vol. 5, pp. 89-129). Greenwich, CT: JAI Press.

Ross, B. L., & Berg, C. A. (1990). Individual differences in script reports: Implications for language assessment. Topics in Language Disorders, 10(3), 30-44.

Rumelhart, D. E. (1976). Understanding and summarizing brief stories. In D. LaBerge & S. J. Samuels (Eds.), Basic processes in reading: Perceptions and comprehension. Hillsdale, N.J.: Lawrence Erlbaum.

Schank, R. C., & Abelson, R. P. (1977). Scripts, plans, goals and understanding: An inquiry into human knowledge structures. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Schunk, D. H. (1984). Self-efficacy perspectives on achievement behavior. Educational Psychologist, 19, 48-58.

Schunk, D. H. (1986). Verbalization and children's self-regulated learning. Contemporary Educational Psychology, 11, 347-369.

Schunk, D. H. (1994). Self-regulation of self-efficacy and attributions in academic settings. In D. H. Schunk & B. J. Zimmerman (Eds.), Self-regulated learning and performance, (pp. 75-99). Hillsdale, NJ: Lawrence Erlbaum Associates.

Semel, E., Wiig, E., & Secord, W. (1987). Clinical Evaluation of Language Fundamental-Revised. Austin, TX: Psychological Corporation.

Slackman, E. A., Hudson, J. A., & Fivush, R. (1986). Actions, actors, links, and goals: The structure of children's event representations. In K. Nelson (Ed.), Event knowledge: Structure and function in development (pp. 47-69). Hillsdale, NJ: Erlbaum.

Spates, C. R., & Kanfer, F. H. (1977). Self-monitoring, self-evaluation and self-reinforcement in children's learning: A test of multi-stage self-regulation model. Behavior Therapy, 8, 9-16.

Thorensen, C. E., & Mahoney, M. J. (1974). Behavioral self-control. New York: Holt, Rinehart & Winston.

Tomkins, S. S. (1979). Script theory: Differential magnification of affects. In C. B. Keasey (Ed.), Nebraska Symposium on Motivation, Vol. 26, (pp. 201-306). Lincoln: University of Nebraska.

Tomkins, S. S. (1987). Script theory. In J. Aronoff, A. I. Rabin, & R. A. Zucker (Eds.), The emergence of personality. New York: Springer Publishing Co. (pp.147-216).

Tomkins, S. S. (1991). Affect, imagery, consciousness, Vol. III: The negative affects-anger and fear. New York: Springer.

Tomkins, S. S. (1992). Affect, imagery, consciousness, Vol. IV: Cognition-Duplication and transformation of information. New York: Springer.

Wang, M. C. (1983). Development and consequences of students' sense of personal control. In J. M. Levine & M. C. Wang (Eds.), Teacher and Student perceptions: Implications for learning (pp. 213-247). Hillsdale, NJ: Earbaum.

Wang, M. C., & Peverly, S. T. (1986). The self-instructive process in classroom learning contexts. Contemporary Educational Psychology, 11, 370-404.

Wiig, E.H., & Secord, W. (1985). Test of language competence. Columbus, OH: Charles E. Merrill.

Yacci, M. (1990,). Assessing knowledge structures (IR 014 535). Proceedings of Selected Paper presentations at the Convention of the Association for Educational Communications and Technology. (ERIC Document Reproduction Service No. ED 323 957).

Zimmerman, B. J. (1981). Social learning theory and cognitive constructivism. In I. E. Sigel, D. M. Brodzinsky, & M. Golinkoff (Eds.), New directions in Piagetian theory and practice (pp.39-49). Hillsdale, NJ: Earlbaum.

Zimmerman, B. J. (1983) Social learning theory: A contextual account of cognitive functioning. In C. J. Brainerd (Ed.) Recent advances in cognitive developmental theory. New York: Springer.

Zimmerman, B. J. (1986) Development of self-regulated learning: Which are the key sub processes? Contemporary Educational Psychology, 16, 307-313.

Zimmerman, B. J. (1989a). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theory, research, and practice (pp. 1-25). New York: Springer-Verlag.

Zimmerman, B. J. (1989b). A social cognitive view of self-regulated academic learning. Journal of Educational Psychology, 81, 329-339.

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. Educational Psychologist, 25(1), 3-17.

Zimmerman, B. J. (1994). Dimensions of academic self-regulation: A conceptual framework for education. In D. H. Schunk & B. J. Zimmerman (Eds.), Self-regulated learning and performance, (pp. 3-21). Hillsdale, NJ: Lawrence Earlbaum Associates.

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self regulated learning strategies. American Educational Research Journal, 23, 614-628.

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. Journal of Educational Psychology, 80, 284-290.

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. Journal of Educational Psychology, 82, 51-59.

Zimmerman, B. J., & Schunk, D.H. (Eds.). (1989). Self-regulated learning and academic achievement: Theory, research, and practice. New York: Springer Verlag.

Table 1

Break Down of Script Elements by Basic Script Elements, Action Script Elements and Explanatory Script Elements

Basic script elements	Action script elements	Explanatory script elements
Decide on a topic	Decide on a topic	So the topic would not be so broad (why)
Narrow it down	Narrow it down	Go to the library (how)
So the topic would not be so broad	Do some research	By making note cards (how)
Go to the library	Keep up with what is researched	When through with researching (when)
Do some research on the topic	Go over the notes cards	When finished with the rough draft (when)
Keep up with what is researched	Start my rough draft	For errors in spelling (how)
By making note cards	Proof read it	After proof reading (when)
When through with researching	Make sure nothing is left out that might be important	When finished with it (final draft) (when)
Go over the note cards and	Start my final draft	
Start my rough draft	Proofread once more	
When finished with the rough draft	Turn it in	
Proofread it		
For errors in spelling		
After proof reading		
Make sure nothing is left out that might be important		
Then start my final draft		
When finished with it		
Proofread once more		
Then turn it in		

Table 2

Mean Frequencies of Students' Script Elements in the Three Learning Situations as Explained by Four Basic Questions

Script elements	Preparing a term paper		Getting ready for a final exam		Preparing an oral presentation	
	M	SD	M	SD	M	SD
Action ("What")	6.28	2.43	3.41	1.93	3.98	2.38
Explanatory ("How")	1.49	1.46	0.97	1.08	1.21	1.28
Explanatory ("When")	0.56	1.10	0.62	0.86	0.46	0.85
Explanatory ("Why")	0.31	0.62	0.33	0.57	0.44	0.81

Table 3

Primary Script Elements in Students' Scripts Related to Three Learning Situations

Primary Script Actions		
Preparing a Term Paper	Getting Ready for a Final Examination	Preparing an Oral Presentation
1. Decide upon my topic (25)	1. Gather information needed for exam (38)	1. Decide on a topic (12)
2. Research in a library (24)	2. Work on the study guide (21)	2. Gather information on the topic (40)
3. Gather information on the topic from different sources (53)	3. Study all material that the test would cover (57)	3. Write your presentation (39)
4. Organize information (42)	4. Answer a practice test (11)	4. Memorize most of presentation (22)
5. Write a rough draft (49)		5. Practice my presentation (34)
6. Make corrections (28)		
7. Write the final draft (56)		

Note. Numbers in parenteheses indicate numbers of students out of 61 who included a particular script action.

Table 4

Mean Frequencies of Elements of Self-Regulation Incorporated in Students' Scripts

Self-Regulation Elements	Preparing a Term Paper		Getting ready for a Final Exam		Preparing an Oral Presentation	
	M	SD	M	SD	M	SD
Self-evaluation	0.41	0.61	0.21	0.73	0.23	0.59
Organization and transformation	1.39	0.69	0.15	0.44	0.61	0.67
Goal setting and planning	0.62	0.69	0.31	0.53	0.46	0.65
Seeking information	1.05	0.56	0.34	0.48	0.62	0.52
Keeping records and monitoring	0.46	0.62	0.13	0.34	0.26	0.44
Environmental structuring	0.02	0.13	0.07	0.25	0.00	0.00
Rehearsing and memorizing	0.00	0.00	0.25	0.43	0.56	0.67
Seeking social assist. peers	0.05	0.22	0.10	0.30	0.05	0.22
Seeking social assist. teachers	0.00	0.00	0.05	0.22	0.00	0.00
Seeking social assist. adults	0.10	0.30	0.03	0.18	0.08	0.28
Reviewing records-tests	0.00	0.00	0.12	0.32	0.00	0.00
Reviewing records-notes	0.07	0.25	0.61	0.56	0.07	0.25
Reviewing records-texts	0.00	0.00	0.05	0.22	0.00	0.00
Reflective thinking	0.18	0.39	0.00	0.00	0.00	0.00
Controlling emotions	0.00	0.00	0.15	0.40	0.23	0.50

Table 5

Univariate F Tests Associated With Frequency of Elements of Self-Regulation in Students' Scripts Related to the Three Learning Situations

Variable	SS	MS	F
Self-evaluation	1.45	0.73	2.35
Organization and transformation	48.44	24.22	65.27**
Goal setting and planning	2.96	1.48	3.78*
Seeking information	15.38	7.69	28.27**
Keeping records and monitoring	3.32	1.66	7.14**
Environmental structuring	0.14	0.07	2.71
Rehearsing and memorizing	9.52	4.76	22.33**
Seeking social assist. parents	0.10	0.05	0.80
Seeking social assist. teachers	0.10	0.05	3.10*
Seeking social assist. adults	0.14	0.07	1.07
Reviewing records-tests	0.54	0.27	7.78**
Reviewing records-notes	11.90	5.95	41.15**
Reviewing records-texts	0.10	0.50	3.10**
Reflective thinking	1.32	0.66	13.20**
Controlling emotions	1.65	0.83	6.07**

*$p < .05$. **$p < .01$.